

**ANALYSIS AND PRELIMINARY DETERMINATION FOR THE CONSTRUCTION AND
OPERATION PERMITS FOR THE PROPOSED MODIFICATION
OF GRAIN DRYING, DDGS STORAGE, FUGITIVE EMISSIONS, AND GRAIN TOASTING
FOR**

**DIDION MILLING, INC.,
TO BE LOCATED AT
501 SOUTH WILLIAMS STREET,
CAMBRIA, COLUMBIA COUNTY, WISCONSIN**

Permit # 07-DCF-003 and/or 111081520-F02 Construction
Facility ID # 111081520

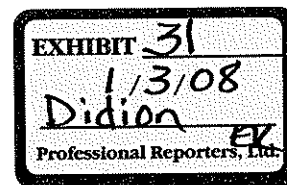
This review was performed by the Wisconsin Department of Natural Resources, Bureau of Air Management in accordance with Chapter 285, Wis. Stats., and Sections NR 400 to NR 499, Wis. Adm. Code.

Reviewed by: Don C. Faith III Date: 6/25/2007

Peer review conducted by: /s/ Steven D. Dunn Date: 6/25/2007

Preliminary Determination Approved by:	Signature	Date
Regional Supervisor or Central Office Designee:	/s/ Jeffrey C. Hanson	07/03/2007
Stationary Source Modeling Team Leader:	/s/ Jeff Sims	07/03/2007
Compliance Engineer (reviewed/approved):	/s/ Mike Sloat	6/26/2007

cc: Michael Sloat — South Central Region Air Program, Reedsburg Area Office
Jane Morgan Memorial Library, 109 W. Edgewater St., PO Box 477, Cambria, WI 53923-0477



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INTRODUCTION

Stationary sources that are not specifically exempt from the requirement to obtain a construction permit under s. 285.60(5), Wis. Stats. or ch. NR 406, Wis. Adm. Code may not commence construction, reconstruction, replacement, relocation or modification unless a construction permit for the project has been issued by the Department of Natural Resource's (DNR's) Air Management Program. Owners or operators subject to the construction permit requirements must submit a construction and operation permit application to the DNR. The application is reviewed following the provisions set forth in ss. 285.60 to 285.65, Wis. Stats. The criteria for permit issuance vary depending on whether the source is major or minor and whether the source is locating in an attainment or nonattainment area.

Subject sources are to be reviewed with respect to the equipment and facility description provided in the application and for the resulting impact upon the air quality. The review ensures compliance with all applicable rules and statutory requirements. The plan review will show why the source(s) should be approved, conditionally approved, or disapproved. It will encompass emission calculations and an air quality analysis using US EPA models, if applicable. As a precautionary note, the emission estimates are based on US EPA emission factors (AP-42) or theoretical data and can vary from actual stack test data.

The sources included in this construction permit are also required to obtain an operation permit under s. 285.60(1)(b), Wis. Stats. This review constitutes the Department's review of applications for both the construction permit and the operation permit for these units. This review may be updated when the compliance demonstration information is received. An operation permit may be issued after the applicant demonstrates that the sources included in the construction permit are in compliance with the applicable rules, emission limits and the conditions. Completion of this project will also result in a revision of the facility-wide operation permit. Once construction is complete and compliance with applicable requirements has been demonstrated, a revised facility-wide operation permit may be issued which incorporates the requirements of the construction permit. This preliminary determination also addresses the development of the revised facility-wide operation permit.

GENERAL APPLICATION INFORMATION

Owner/Operator: Didion Milling, Inc.
501 South Williams Street
Cambria, WI 53923

Responsible Official: Mr. Dow Didion, President

Application Contact Person: Kevin Miller, Air Quality Engineer
612-215-6091

Application Submitted By: Kevin Miller, Air Quality Engineer
612-215-6091

Application submittal date: January 08, 2007

Additional Information Submitted: February 01, 2007; February 15, 2007, February 17, 2007; March 22, 2007; May 15, 2007; June 13, 2007

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Date of Complete Application: June 14, 2007

PROJECT DESCRIPTION

Didion Milling has requested a modification of their existing permit to allow more extended operation of the grain drying process (P16), installing additional toasting operations within the Mill/Germ Recovery/Toasting/Grinding Filter process (P20) and to add additional DDGS storage. Though the facility is proposing to lower the grain dryer throughput by 40%, the requested increase in hours of operation is prohibited by a permit (and the lower throughput / emissions needs to be made enforceable) and thus is subject to construction permitting. The additional toasting operation is also proposed to result in emissions (from S22) higher than currently allowed under the permit, and thus is also subject to construction permitting. Though the additional DDGS storage is proposed as a revision of the throughput capacity originally permitted, it is part of the overall project, and thus is also subject to construction permitting. The facility has identified other changes that will be incorporated into the review.

SOURCE DESCRIPTION

Didion Milling (DM) is in the process of building a fuel grade ethanol production facility (Didion Ethanol) at a 'greenfield' site adjacent / contiguous with their existing grain storage / milling operation in Cambria, WI. Emission sources at the plant include grain handling (storage, milling) primarily conducted within their existing operation, spent grain drying, fermentation, distillation, wet grain handling, combustion, storage tanks and fugitives. The plant has a proposed annual capacity of 50 million gallons of ethanol.

The facility has proposed a 40% reduction in the grain dryer throughput (3000 Bushels per hour vs. the prior 5000 Bu/hr., and an associated lower emission rate), to enable the grain dryer to have more hours of operation as compared to the current permit. These extended hours prior to initial operation of the ethanol facility, and longer grain dryer operating hours upon initial operation of the ethanol plant, are dependent upon control of the silo emissions, and permanent reduction of the grain dryer throughput. The facility has indicated that it will make changes to the feed equipment gearing which will insure a reduction in the throughput, though the facility will need to provide a means of monitoring this throughput.

The addition of more grain 'toasting' equipment within the process P20, will require modification of the emission limit to 0.57 pounds per hour.

In addition the Department has determined that the fugitive road dust, silt loading factor that had previously been proposed (0.6 grams / meter squared), may be difficult to achieve, based on discussions with other ethanol producing states. To reflect a silt loading factor that is more representative (but which still requires use of practices to limit fugitive dust emissions), the facility is proposing to use a factor of 3.0 grams per meter squared. This is identical to the value used by United Wisconsin Grain Producers (nearby, near Friesland), and which can normally be achieved by good fugitive dust control practices. This higher factor and the updated vehicle miles traveled, results in predicted fugitive dust emissions of ~ 50 TPY, which is still sufficient to assure that the facility remains a synthetic minor source, under the PSD regulations, when accompanied by the reduction in the grain dryer throughput, and other limitations on particulate matter emissions.

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The facility has determined that due to the location of the loading racks in comparison to the DDGS dryer / oxidizer, they will need to control the emissions from the loading racks separately using a dedicated flare (C34), rather than the thermal oxidizer.

The size of two ethanol storage tanks will be increased under this review. The tanks are taller and were also evaluated to confirm that the modeling remains approvable.

Portions of the existing operation were also identified as needing correction (section L and M) to reflect the actual plant configuration. Section N of the permit will be removed since there is no actual process P12 controlled by a separate fabric filter C12. Instead, there are processes P12S and P12 N (North and South milling, which had been previously identified) that are directed to C10 and C11 respectively. These emissions are not modified.

Other changes (primarily the description) have been identified for the Hammermill filter / grain milling section "O."

Description of New or Modified Units.

1. Process P16 – Emission Unit Information.

Process Parameter	Description
Process/boiler/furnace/ number:	P16
Unit description:	Grain Dryer
Control technology status:	Fine diameter dryer sieve plate
Maximum continuous rating (mmBTU/hr):	19.34
Date of construction or last modification:	1999
Construction Permit Requirements:	Proposed changes constitute a modification (due to increased hours of operation)

(2) Process P16 – Process Fuel Information.

Fuel Parameter	Primary Fuel	Backup Fuel #1	Backup Fuel #2
Fuel Name:	Natural Gas		
Higher Heating Value:	1000 BTU / cf		
Maximum Sulfur Content (weight %):	-		
Maximum Ash Content (weight %):	-		
Maximum hourly consumption:			

a. Stack F18 — Stack Information.

Stack Parameter	Description	Stack Parameter	Description
Stack Identification Number:	F18	Exhaust flow rate, normal (ACFM):	
Exhausting Unit(s):	P16	Exhaust gas temperature, normal (°F):	
This stack has an actual exhaust point:	Volume Source	Exhaust gas discharge direction:	"Outward"
Discharge height above ground level (ft):	56.7 ft. avg (volume source).	Stack equipped with any obstruction:	NA
Inside dimensions at outlet (ft):			

2. Process P20 — Emission Unit Information.

Process Parameter	Description
Process/boiler/furnace/ number:	P20
Unit description:	Mill/Germ Recovery/Toasting/Grinding Filter - Grain Milling
Control technology status:	Fabric Filter baghouse
Maximum continuous rating (mmBTU/hr):	6 MMBTU/hr additional toasting capacity
Date of construction or last modification:	Upon permit issuance
Construction Permit Requirements:	

(2) Process P20 — Process Fuel Information.

Fuel Parameter	Primary Fuel	Backup Fuel #1	Backup Fuel #2
Fuel Name:	Natural Gas		
Higher Heating Value:	1000 BTU / cf		
Maximum Sulfur Content (weight %):			
Maximum Ash Content (weight %):			
Maximum hourly consumption:			

b. Stack S22 — Stack Information.

Stack Parameter	Description	Stack Parameter	Description
Stack Identification Number:	S22	Exhaust flow rate, normal (ACFM):	18000

b. Stack S22 – Stack Information.

Stack Parameter	Description	Stack Parameter	Description
Exhausting Unit(s):	P20	Exhaust gas temperature, normal (°F):	90
This stack has an actual exhaust point:		Exhaust gas discharge direction:	Up
Discharge height above ground level (ft):	92 ft. 0 in.	Stack equipped with any obstruction:	
Inside dimensions at outlet (ft):	2 ft. 6 in. 0 ft. 0 in.		

c. Control Device Information.

Properties	Description
Control Device Number:	C22
Unit Description:	Fabric Filter Baghouse
Exhaust grain loading	0.0037 gr/dscf

Fugitive Road Dust emissions F06. Modified to incorporate a higher silt loading factor, and higher Vehicle Miles Traveled. Silt loading factor of 3.0 grams / sq. meter.

The facility has also modified the quantities of fugitive dust from the DDGS associated handling, storage and loadout. (F03, F04 and F07).

3. Process P54, P55 – Emission Unit Information.

Process Parameter	Description
Process/boiler/furnace/ number:	P54, P55
Unit description:	DDGS Elevator, DDGS Loadout, DDGS Storage, DDGS Silo
Control technology status:	Yes (fabric filter baghouse)
Maximum continuous rating (mmBTU/hr):	N/A
Date of construction or last modification:	Under construction
Construction Permit Requirements:	

d. Stack S33 — Stack Information.

Stack Parameter	Description	Stack Parameter	Description
Stack Identification Number:	S33	Exhaust flow rate, normal (ACFM):	6800
Exhausting Unit(s):	P54, P55	Exhaust gas temperature, normal (°F):	70
This stack has an actual exhaust point:		Exhaust gas discharge direction:	Up
Discharge height above ground level (ft):	60 ft. 0 in.	Stack equipped with any obstruction:	
Inside dimensions at outlet (ft):	1 ft. 5.6 in. 0 ft. 0 in.		

e. Control Device Information.

Properties	Description
Control Device Number:	C33
Unit Description:	DDGS Elevator / Loadout baghouse
Exhaust grain loading	0.005 gr/dscf

Stack S38, Control C34, Processes P52, P53 - Ethanol Loadout (Truck), Ethanol Loadout (Rail). Control C34: Max. heat input of 6.8 MMBTU/hr. Maximum short term loadout rate: 60,000 gph
Usage: Flare is noted as achieving 98% control, and meets requirements of s. NR 440.18, Wis. Adm. Code.

Tanks T04, T05 (denatured ethanol storage tanks). 711,459 gallons, Height 52 ft., Diameter 58 ft.

Insignificant Emissions Units.

- ☒ Boiler, Turbine, and HVAC System Maintenance.
- ☒ Convenience Space Heating (< 5 million BTU/hr Burning Gas, Liquid, or Wood).
- ☒ Convenience Water Heating.
- ☒ Demineralization and Oxygen Scavenging of Water for Boilers.
- ☒ Fire Control Equipment.
- ☒ Internal Combustion Engines Used for Warehousing and Material Transport.
- ☒ Janitorial Activities.
- ☒ Maintenance of Grounds, Equipment, and Buildings (lawn care, painting, etc.).
- ☒ Office Activities.
- ☒ Pollution Control Equipment Maintenance.
- ☒ Purging of Natural Gas Lines.
- ☒ Sanitary Sewer and Plumbing Venting.

CROSS MEDIA IMPACTS

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No direct cross media impacts are anticipated: The scrubbers used by the facility recycle their captured VOC's and water back into the process. The thermal oxidizer and flare do not have 'cross media impacts,' (the emissions are combusted by the oxidizer / flare). The grain dust collected by the baghouses are returned to the process.

WISCONSIN HAZARDOUS AIR POLLUTANT (NR 445) REVIEW

The facility sources undergoing modification under this permit review, are all sources which combust natural gas or other group 1 virgin fossil fuels, or which are not noted as having any hazardous air pollutant emissions. Since the only known hazardous air pollutant emissions are from the combustion of group 1 virgin fossil fuels, these sources are exempt from control requirements under s. NR 445.07, Wis. Adm. Code.

COMPLIANCE AND TECHNOLOGY REVIEW

The facility will emit particulate matter from road dust, grain receiving / handling and milling. The existing operations are expected to have the capacity to accommodate the higher production rate needed to provide material to the new ethanol operation.

The proposed permit will allow higher emissions from P20, and longer operating hours associated with the grain drying process (with an associated reduction in throughput and allowable emissions). The ambient air quality modeling in the following section, indicates that for the scenarios examined, ambient air quality and PSD increment impacts will be in compliance with the standards. The modeling examined two separate scenarios: 1.) Operation of the grain mill, prior to emissions from any new ethanol plant sources, and 2.) Operations of both the grain mill and ethanol plant sources.

Note that the facility is relying upon baghouse fabric exit (outlet) concentrations, and the exhaust flows to arrive at the allowable emission rates noted, (which in some cases has undergone testing that shows the exit concentration). The proposed concentrations are generally low (0.0037 gr/acf to 0.0010 gr/acf). The DDGS loading is asserted as having an outlet concentration of 0.005 gr/acf.

The PM emissions from the grain receiving operation and other like operations will continue to be controlled with fabric filter baghouses. The operating pressure drop will be maintained within the range of about 2 to 5 inches of water column gauge pressure. The corn hammer mill and milled grain transport will also emit PM and will be controlled by separate baghouses with similar range of operating pressure drop.

The facility has identified that it would like to install larger storage tanks than had originally been identified. The larger tanks will have fewer turnovers (lower withdrawal losses), so do not significantly effect emission, but these changes need to be reflected within the permit.

The facility has also identified some changes in the process identification for some of the existing operations.

There are facility wide sections pertaining to fugitive dust requirements, including fugitive road dust. These requirements have been updated to reflect a formal requirement for the silt loading factor used to determine the fugitive road dust emissions, and establish compliance demonstration methods for this factor.

It is proposed that the grain dryer limitation be stated as a tons per hour limit (84.0 tons per hour), rather than a volumetric (3000 Bu/hr) limit, as the emission factor is stated in units of pounds of emissions per

ton of grain throughput. The conversion from Bushels (volume) to the mass of corn, is dependent upon the corn moisture content: Normally, at 15.5% moisture, a bushel of corn will weigh 56.0 pounds. This conversion is based on the mass rate of 'dried' corn.

The modeling analysis below has examined a number of different scenarios. The facility has two possible locations for its DDGS storage building (northern and southern), operations prior to initial operation of portions of the ethanol plant, vs. once the ethanol plant begins initial operations, and may also totally enclose the grain dryer and direct these emissions to a stack. There are separate blocks of times during which the dryer may operate prior to initial operation of the ethanol plant, vs. a much more restricted timeframe that applies once the ethanol plant starts up any associated emissions unit, if the grain dryer is operated as a fugitive / volume source. The location of the DDGS storage building did not appear to have a significant effect upon the ambient impacts, such that the hours of operation were not affected based on the specific location of the DDGS storage. The application of a total enclosure and venting to a 105 ft. high, 8.0 ft. diameter, unobstructed stack, eliminates the need for a structured hours of operation restriction from the dryer (either for pre-ethanol or post ethanol scenarios), thought the throughput limitation and a 222.2 hour / mo. (12 mo. avg.) limit will still be necessary as the annual emission rate is proposed to be restricted by the applicant. It is proposed that if the facility elects to enclose and stack vent the grain dryer, that they be required to test the emission rate of PM₁₀ emissions. Once the operation has been enclosed, it becomes possible to conduct a test of the emissions from this source. The enclosure may serve as a settling chamber for larger particulate matter from the dryer, but the PM₁₀ would be expected to remain about the same.

The facility is proposing to install a use a flare to control emissions from ethanol loadout, rather than directing these emissions to the thermal oxidizer (RTO). The facility is proposing that the flare will meet the NSPS General Control Device requirements of s. NR 440.18, Wis. Adm. Code, such that it should be anticipated to achieve 98% control. The emissions from the flare are limited by the facility throughput limit of 50 E6 gal/yr.

AIR QUALITY REVIEW

A modeling analysis for Didion Ethanol was completed April 3, 2007 by Gail Good, and again on May 30, 2007 based on additional changes requested by the facility. . This analysis assessed the impact of the particulate matter, nitrogen oxide, sulfur dioxide, and carbon monoxide emissions in support of a construction permit (07-DCF-003). This modeling is also associated with a prior construction permit (06-DCF-166) for this source. This new analysis was necessary because Didion is installing a flare stack (S38), removing a stack from the permit (S12), and is increasing the size of two tanks, revised the plant layout and is varying the operational needs for the grain dryer, and may also change the status of the grain dryer to a point source to increase the amount of allowed operation. An optional DDGS dryer location was also evaluated. Both of the DDGS dryer locations were found to be approvable and the enclosure of the existing grain dryer would remove restrictions on its allowable hours of operation.

MODELING ANALYSIS

- ◆ The consultant, NRG, supplied the emission parameters used in the analysis for this facility. The parameters were checked by Don Faith of the Wisconsin Department of Natural Resources. Building

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dimensions were determined with USEPA's BPIPPRM using measurements taken on plot plans provided with the application. Please refer to the source parameter table.

- ◆ Five years (1998-2002) of preprocessed meteorological data was used in this analysis. The surface data was collected in Juneau and the upper air meteorological data originated in Green Bay.
- ◆ AERMOD was also used in the analysis. The model used regulatory default options. These allow for calm wind correction, buoyancy induced dispersion, and building downwash.
- ◆ The facility will be located in a PSD baseline county, so increment consumption was considered for this analysis. Using AEMS, it was determined that no other facilities are either near enough to Didion Ethanol's proposed location or had increment consuming equipment to consider. However, the entire United Ethanol facility consumes increment.
- ◆ Regional background concentrations were found to be as follows:

BACKGROUND CONCENTRATIONS (Concentrations are in $\mu\text{g}/\text{m}^3$)			
Monitoring Site	Pollutant	Averaging Period	Concentration
Rodefild Landfill NE Site Madison Dane County	TSP	24 hour	69.3
Rodefild Landfill SE Site Madison Dane County	PM ₁₀	24 hour Annual	56.0 22.2
East 12886 Tower Road Devils Lake State Park Sauk County	NO _x	Annual	4.7
923 270 th Avenue Luck Polk County	CO	1 hour 8 hour	3188.0 890.4
1415 East Walnut Green Bay East H.S Brown County	SO ₂	3 hr 24 hr Annual	128.3 33.5 7.9

- ◆ The receptors used in this analysis consisted of a rectangular grid extending around the facility. A grid of points was set up specifically to represent the fenceline, which is shown on plot plans submitted with the application. Approximately 1684 receptors were used to model this facility. Points within the fenceline were not considered. Terrain was considered in this analysis.

MODEL RESULTS

The results demonstrate that the ambient air quality standards for TSP, PM₁₀, SO₂, NO_x, and CO will be attained and maintained assuming the emission rates and stack parameters listed in the attached source table. Note that the consultants performed a load analysis for the facility. Only the highest results are shown here.

Modeling Analysis Results – Prior to Ethanol Operations (Grain Dryer as a Volume Source)* (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	TSP – 24 hr	PM ₁₀ – 24 hr	PM ₁₀ – Annual
Facility Impact	75.5	26.9	6.8
Increment	-	30.0	17.0
% Increment Consumed	-	89.7	40.0
Background Concentration	69.3	56.0	22.2
Total Concentration	144.8	82.9	29.0
NAAQS	150.0	150.0	50.0
% NAAQS	96.5	55.3	58.0

* The grain dryer will be allowed to operate under the following schedule prior to construction of the ethanol plant (if vented as a volume source):

December – February: 10AM – 5 PM

March – August: 9 AM – 6 PM

September – November: 10 AM – 4 PM

Modeling Analysis Results – Prior to Ethanol Operations (Grain Dryer as a Stack Vented Source)* (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	TSP – 24 hr	PM ₁₀ – 24 hr	PM ₁₀ – Annual
Facility Impact	23.6	23.4	5.3
Increment	-	30.0	17.0
% Increment Consumed	-	78.0	31.2
Background Concentration	69.3	56.0	22.2
Total Concentration	92.9	79.4	27.5
NAAQS	150.0	150.0	50.0
% NAAQS	61.9	52.9	55.0

* The grain dryer does not need restrictions on hours of operation when vented to a stack according to Didion's proposal.

Modeling Analysis Results – Post-Ethanol Operations (Grain Dryer Vented as a Volume Source/DDGS in northern location)** (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	TSP – 24 hr	PM ₁₀ – 24 hr	PM ₁₀ – Annual
Facility Impact	63.6	27.1	6.8
Increment	-	30.0	17.0
% Increment Consumed	-	90.3	40.0
Background Concentration	69.3	56.0	22.2

Total Concentration	132.9	83.1	29.0
NAAQS	150.0	150.0	50.0
% NAAQS	88.6	55.4	58.0

** The grain dryer will be allowed to operate under the following schedule after construction of the ethanol plant (if vented as a volume source):

September – February: 10 AM – 3 PM

Modeling Analysis Results – Post-Ethanol Operations (Grain Dryer Vented as a Volume Source/DDGS in southern location)** (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	TSP – 24 hr	PM ₁₀ – 24 hr	PM ₁₀ – Annual
Facility Impact	63.6	27.1	6.8
Increment	-	30.0	17.0
% Increment Consumed	-	90.3	40.0
Background Concentration	69.3	56.0	22.2
Total Concentration	132.9	83.1	29.0
NAAQS	150.0	150.0	50.0
% NAAQS	88.6	55.4	58.0

** The grain dryer will be allowed to operate under the following schedule after construction of the ethanol plant (if vented as a volume source):

September – February: 10 AM – 3 PM

Modeling Analysis Results – Post-Ethanol Operations (Grain Dryer as a Stack Vented Source/DDGS in northern location)** (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	TSP – 24 hr	PM ₁₀ – 24 hr	PM ₁₀ – Annual
Facility Impact	26.9	25.0	6.0
Increment	-	30.0	17.0
% Increment Consumed	-	83.3	35.3
Background Concentration	69.3	56.0	22.2
Total Concentration	96.2	81.0	28.2
NAAQS	150.0	150.0	50.0
% NAAQS	64.1	54.0	56.4

** The grain dryer does not need restrictions on hours of operation when vented to a stack according to Didion's proposal.

Modeling Analysis Results – Post-Ethanol Operations
(Grain Dryer as a Stack Vented Source/DDGS in southern location)**
(All Concentrations in $\mu\text{g}/\text{m}^3$)

	TSP – 24 hr	PM ₁₀ – 24 hr	PM ₁₀ – Annual
Facility Impact	27.0	25.0	6.0
Increment	-	30.0	17.0
% Increment Consumed	-	83.3	35.3
Background Concentration	69.3	56.0	22.2
Total Concentration	96.3	81.0	28.2
NAAQS	150.0	150.0	50.0
% NAAQS	64.2	54.0	56.4

** The grain dryer does not need restrictions on hours of operation when vented to a stack according to Didion's proposal.

Modeling Analysis Results – Prior to Ethanol Operations (Grain Dryer Vented as a Volume Source) (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	SO ₂ – 3 hr	SO ₂ – 24 hr	SO ₂ – Annual
Facility Impact	0.6	0.3	0.07
Increment	512.0	91.0	20.0
% Increment Consumed	0.1	0.3	0.4
Background Concentration	128.3	33.5	7.9
Total Concentration	128.9	33.8	7.97
NAAQS	1,300.0	365.0	80.0
% NAAQS	9.9	9.3	10.0

Modeling Analysis Results – Prior to Ethanol Operations (Grain Dryer as a Stack Vented Source) (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	SO ₂ – 3 hr	SO ₂ – 24 hr	SO ₂ – Annual
Facility Impact	0.6	0.3	0.06
Increment	512.0	91.0	20.0
% Increment Consumed	0.1	0.3	0.3
Background Concentration	128.3	33.5	7.9
Total Concentration	128.9	33.8	7.96
NAAQS	1,300.0	365.0	80.0
% NAAQS	9.9	9.3	10.0

Modeling Analysis Results – Post-Ethanol Operations (Grain Dryer Vented as a Volume Source) (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	SO ₂ – 3 hr	SO ₂ – 24 hr	SO ₂ – Annual
Facility Impact	31.6	15.7	2.0
Increment	512.0	91.0	20.0
% Increment Consumed	6.2	17.3	10.0
Background Concentration	128.3	33.5	7.9
Total Concentration	134.5	49.2	9.9
NAAQS	1,300.0	365.0	80.0
% NAAQS	10.3	13.5	12.4

Modeling Analysis Results – Post-Ethanol Operations (Grain Dryer as a Stack Vented Source) (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	SO ₂ – 3 hr	SO ₂ – 24 hr	SO ₂ – Annual
Facility Impact	31.6	15.7	2.0
Increment	512.0	91.0	20.0
% Increment Consumed	6.2	17.3	10.0
Background Concentration	128.3	33.5	7.9
Total Concentration	134.5	49.2	9.9
NAAQS	1,300.0	365.0	80.0
% NAAQS	10.3	13.5	12.4

Modeling Analysis Results – Prior to Ethanol Operations (Grain Dryer Vented as a Volume Source) (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	CO – 1 hr	CO – 8 hr	NO _x – Annual
Facility Impact	171.2	61.6	10.8
Increment	-	-	25.0
% Increment Consumed	-	-	43.2
Background Concentration	3188.0	890.4	4.7
Total Concentration	3359.2	952.0	15.5
NAAQS	40000.0	10000.0	100.0
% NAAQS	8.4	9.5	15.5

Modeling Analysis Results – Prior to Ethanol Operations (Grain Dryer as a Stack Vented Source) (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	CO – 1 hr	CO – 8 hr	NO _x – Annual
Facility Impact	140.6	56.5	11.2
Increment	-	-	25.0
% Increment Consumed	-	-	44.8
Background Concentration	3188.0	890.4	4.7
Total Concentration	3328.6	946.9	15.9
NAAQS	40000.0	10000.0	100.0
% NAAQS	8.3	9.5	15.9

Modeling Analysis Results – Post Ethanol Operations (Grain Dryer Vented as a Volume Source) (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	CO – 1 hr	CO – 8 hr	NO _x – Annual
Facility Impact	140.6	68.6	22.1
Increment	-	-	25.0
% Increment Consumed	-	-	88.4
Background Concentration	3188.0	890.4	4.7
Total Concentration	3379.1	959.0	26.8
NAAQS	40000.0	10000.0	100.0
% NAAQS	8.4	9.6	26.8

Modeling Analysis Results – Post Ethanol Operations (Grain Dryer as a Stack Vented Source) (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	CO – 1 hr	CO – 8 hr	NO _x – Annual
Facility Impact	140.6	64.1	22.1
Increment	-	-	25.0
% Increment Consumed	-	-	88.4
Background Concentration	3188.0	890.4	4.7
Total Concentration	3379.1	954.5	26.8
NAAQS	40000.0	10000.0	100.0
% NAAQS	8.4	9.5	26.8

CONCLUSION

The results of the modeling analysis demonstrate that the applicable air quality standards will be satisfied assuming the emissions rates and stack parameters listed in the source table. Note that the consultants performed a load analysis for the facility. That same analysis was performed by WDNR, but the highest results are shown and the stack parameters are shown for 100% load. Note also that the grain dryer is restricted in its operation. The restrictions for the pre-ethanol and post-ethanol set-up are described above in the Model Results section.

Didion Ethanol - Cambria Stack Parameters					
ID	LOCATION (M)	HEIGHT (M)	DIAMETER (M)	VELOCITY (M/S)	TEMP (K)
COOL1	330325.1, 4822518.0	10.4	2.44	16.07	Ambient
COOL2	330320.5, 4822518.0	10.4	2.44	16.07	Ambient
COOL3	330314.5, 4822518.0	10.4	2.44	16.07	Ambient
COOL4	330308.3, 4822518.0	10.4	2.44	16.07	Ambient
COOL5	330301.8, 4822518.0	10.4	2.44	16.07	Ambient
COOL6	330295.6, 4822518.0	10.4	2.44	16.07	Ambient
COOL7	330289.6, 4822518.0	10.4	2.44	16.07	Ambient
COOL8	330284.1, 4822518.0	10.4	2.44	16.07	Ambient
S32	330374.5, 4822599.5	27.4	1.52	24.68	419
S33	330399.3, 4822716.0	18.3	0.45	20.35	Ambient
S33B	330430.25, 4822604.5	18.3	0.45	20.35	Ambient
S34	330196.3, 4822542.5	18.3	0.91	16.39	427
S35	330196.3, 4822532.0	18.3	0.91	16.39	427
S36	330233.8, 4822518.5	7.6	0.51	39.94	739
S38	330437.9, 4822664.1	10.67	0.45	20	1273
S01	330259.1, 4822776.0	9.8	0.49	10.51	Ambient
S08	330207.5, 482278.0	9.8	0.49	3.79	Ambient
S10	330176.7, 4822763.0	25.6	0.88	13.97	305
S11	330181.4, 4822763.0	25.6	1.22	10.50	305
S14	330252.4, 4822756.0	38.4	0.31	15.63	305
S17	330265.8, 4822700.5	30.5	0.5	19.24	305
S15	330199.1, 4822759.0	9.1	0.41	0.10	416
S16	330198.3, 4822754.0	9.1	0.41	0.10	416
S21	330183.3, 4822745.5	28.0	0.61	29.07	305
S22	330185.7, 4822755.5	28.0	0.76	18.73	305
GRANDRY	330269.09, 4822737.5	32.0	2.43	27.80	355.37

Volume Source Parameters				
ID	Location (UTM)	Release Height (M)	Sigma y (M)	Sigma z (M)
GRDRYER	330270.0, 4822736.5	17.37	1.77	17.01

Didion Ethanol - Cambria Emission Rates					
ID	TSP (LB/HR)	PM ₁₀ (LB/HR)	SO ₂ (LB/HR)	NO _x (LB/HR)	CO (LB/HR)
COOL1	0.023	0.023	-	-	-
COOL2	0.023	0.023	-	-	-
COOL3	0.023	0.023	-	-	-
COOL4	0.023	0.023	-	-	-
COOL5	0.023	0.023	-	-	-
COOL6	0.023	0.023	-	-	-
COOL7	0.023	0.023	-	-	-
COOL8	0.023	0.023	-	-	-
S32	3.6	3.6	6.2	7.813	12.50
S33	0.292	0.292	-	-	-
S33B	0.292	0.292	-	-	-
S34	0.685	0.685	0.05	3.683	2.58
S35	0.685	0.685	0.05	3.683	2.58
S36	0.550	0.550	1.146	1.406	2.22
S38	0.051	0.051	0.004	2.0	5.12
S01	0.122	0.122	-	-	-
S08	0.044	0.044	-	-	-
S10	0.525	0.525	-	-	-
S11	0.224	0.224	-	-	-
S14	0.073	0.073	-	-	-
S17	0.068	0.068	-	-	-
S15	0.064	0.064	0.005	0.838	0.69
S16	0.048	0.048	0.004	0.628	0.52
S21	0.525	0.525	-	-	-
S22	0.571	0.571	0.004	0.6	0.5
GRDRYER*	6.96	1.74	0.01	1.93	1.62

*The grain dryer rates shown here reflect the rates requested after the ethanol plant has been

EMISSIONS FROM NEW EQUIPMENT OR MODIFICATION**A. Stack Emissions.****Stack S22 — Criteria Pollutants Emissions (Stack Height - 92 ft. 0 in.).**

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter Emissions	0.57	2.5
PM10	0.57	2.5
Nitrogen oxides	0.6	2.63
Carbon Monoxide	0.50	2.21

Emissions Prior to Ethanol Plant 2832 hrs/yr (2839 hrs/yr on leap year).

Stack F18 — Criteria Pollutants Emissions (Stack Height - 57 ft. 6 0 in.).

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter Emissions	6.96	9.9
PM10	1.74	2.5
Nitrogen oxides	1.93	2.7
Carbon Monoxide	1.62	2.3
Volatile Organic Compounds	0.11	0.16

Emissions following initial operation of ethanol plant; 905 hrs (910 hrs on leap year)

Stack F18 — Criteria Pollutants Emissions (Stack Height - 57 ft. 6 0 in.).

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter Emissions	6.96	3.15
PM10	1.74	0.8
Nitrogen oxides	1.93	0.88
Carbon Monoxide	1.62	0.7

Volatile Organic Compounds	0.11	0.05
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Emissions if P16 is enclosed and stack vented. Hours of operation restricted to 222.2 hours /mo (12 mo. avg.), which is 2666. hours per year (restriction proposed to keep facility PM emissions below 100 TPY, with ethanol plant in operation).

Stack S23 — Criteria Pollutants Emissions (Stack Height - 105 ft. 6 0 in.).

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter Emissions	6.96	9.3
PM10	1.74	2.3
Nitrogen oxides	1.93	8.45
Carbon Monoxide	1.62	7.1
Volatile Organic Compounds	0.11	0.5

Stack F06 — Criteria Pollutants Emissions

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter Emissions (Pre-ethanol)	-	36.18
PM10 (Pre-ethanol)	-	7.06
Particulate Matter Emissions (including ethanol plant)	-	50.77
PM10 (including ethanol plant)	-	9.9

Stack F03, F04, F07 — Criteria Pollutants Emissions

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter Emissions (each)	-	0.87
PM10 (each)	-	0.56

Stack S33 — Criteria Pollutants Emissions (Stack Height - 60 ft. 0 in.).

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter Emissions	0.29	1.28
PM10	0.29	1.28

Stack S38 — Criteria Pollutants Emissions (Stack Height - 35 ft.).

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter Emissions	0.05	0.13
PM10	0.05	0.13
Nitrogen oxides	2.0	0.84
Carbon Monoxide	5.12	2.13
Volatile Organic Compounds	0.8	2.0

The emissions are based on the vendor provided emission factor / guarantee and the limitation on the amount of ethanol that may be produced (4.167 million gallons per month, 12 mo. avg.).

TOTAL EMISSIONS FROM NEW EQUIPMENT OR MODIFICATION (for total facility, worst case, with ethanol plant operation, enclosed dryer)

Pollutant	Potential to Emit (PTE) Tons per year (TPY)
PM10	48.0
Particulate Matter Emissions	97.1
Nitrogen oxides	91.0
Carbon Monoxide	94.4
Volatile Organic Compounds	55.6
Sulfur Dioxide	27.9

FACILITY AND PROJECT CLASSIFICATION

1. Existing Facility Status.

The existing grain handling facility is a synthetic minor non-Part 70 source and a PSD minor source. The allowable emissions from the facility are limited to less than 100 TPY of criteria pollutants. The PSD major source threshold for the grain elevator facility is 250 TPY, but the facility is obligated to include fugitive emissions in determining major source status, as it is a grain elevator subject to the NSPS (NSPS effective prior to Aug. 7, 1980), under s. NR 405.07(4)(a)27., Wis. Adm. Code. The ethanol plant (under construction, under the authority of 06-DCF-166), is considered having a 100 TPY major source threshold.

2. Project Status.

The project under construction is a fuel grade ethanol production facility and is considered is within

the "Chemical Plant" PSD source category that constitutes a major source at the 100 TPY threshold. This project is noted as resulting in increased emissions of less than 100 TPY such that it is considered a minor modification of a PSD minor source. Total boiler heat input capacity from the existing facility and the proposed new operations will be on the order of 200 million BTU per hour. Federal hazardous air pollutant emissions will be less than the 10 TPY / 25 TPY major source thresholds. This proposed permit is to incorporate changes to the current permit covering both the existing grain handling / processing operations and the ethanol plant that is currently under construction. Fugitive emissions are considered in determining major source status for both the grain elevator and the ethanol chemical process plant.

3. Facility Status after Completion of the Project.

The project to modify the adjacent / contiguous fuel grade ethanol facility (under construction), and the existing grain operations, is expected to remain a minor source under both the Title V and PSD programs, as the total emissions from the combined facility are proposed to remain below the 100 TPY thresholds, and hazardous federal air pollutants will also remain below the 10 TPY / 25 TPY thresholds.

4. Summary.

NSR Applicability	Existing Facility		Proposed Project		Facility After Project	
	Major	Minor	Major	Minor	Major	Minor
PSD		X		X		X
Non-Attainment		NA		NA		NA
Federal HAP		X		X		X

Part 70 Applicability	Existing Facility			Facility After Project		
	Part 70	FESOP (Syn. Minor)	non-part 70	Part 70	FESOP (Syn. Minor)	non-part 70
Status		X			X	

ENVIRONMENTAL ANALYSIS

The proposed project is a Type III action under Chapter NR 150, Wis. Adm. Code, because there is a potential increase in hazardous emissions and the potential to emit of the project is less than 100 TPY for each criteria pollutant.

A news release is required for this proposal and is included in the public comment notice. It is proposed that an environmental assessment not be completed.

RULE APPLICABILITY

The fugitive road dust emissions (and other fugitive dust sources) are regulated under s. NR 415.04, Wis. Adm. Code. More recent permits for ethanol plants are now requiring a more formal examination of the fugitive dust emissions and the associated calculations which use a "silt loading factor" (normally in units

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of grams per meter squared). The AP-42 based protocol permits measurement of silt loading by collection of road dust materials (from a known area), and measurement of the mass of the fraction of material which passes through a 200 mesh screen.

Emission sources which are within a PSD source category, as is currently the case for ethanol plants (considered as within the "chemical plant" category), need to include associated fugitive dust emissions in determining the major source status for these operations.

NEW SOURCE PERFORMANCE STANDARDS (NSPS) APPLICABILITY

For proposed construction of a source:

1. Is the proposed source in a source category for which there is an existing or proposed NSPS? ☒ Yes
☐ No ☐ Not applicable. (If yes, identify the source category.) The new operations being constructed are subject to a number of federal new source performance standards (NSPS). The VOC storage tanks are subject to s. NR 440.285, Wis. Adm. Code. The two new boilers are subject to the small commercial, industrial and institutional steam generating NSPS (s. NR 440.207, Wis. Adm. Code). The fugitive VOC emissions from the ethanol process, are subject to leak detection / control requirements of s. NR 440.62, Wis. Adm. Code. The diesel engine generator is subject to Part 60, Subpart IIII. (These were all addressed within the 06-DCF-166 final permit. There are no new sources subject to NSPS from the permit 07-DCF-003.).
2. Is the proposed source an affected facility? ☒ Yes ☐ No ☐ Not applicable. (Explain if necessary to clarify.)

For the proposed modification of an existing source:

1. Is the existing source, which is being modified, in a source category for which there is an existing or proposed NSPS? ☒ Yes ☐ No ☐ Not applicable. (If yes, identify the source category.) Portions of existing operation (grain handling and grain drying) are considered subject to NSPS but none of these modifications trigger NSPS.
2. Is the existing source, which is being modified, an affected facility (prior to modification)? ☒ Yes
☐ Not applicable. (Explain if necessary to clarify here and in the following items)
3. Does the proposed modification constitute a modification **under NSPS** to the existing source? ☐ Not applicable.
4. Will the existing source be an affected facility after modification? ☐ Not applicable.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS) APPLICABILITY

Part 61 NESHAPS:

1. Will the proposed new or modified source emit a pollutant controlled under an existing or proposed

NESHAPS? ☐ Yes ☒ No (if yes, identify the pollutant).

2. Is the proposed new or modified source subject to an existing or proposed NESHAPS? ☐ Yes ☒ No (if yes, identify NESHAPS).

Part 63 NESHAPS:

1. Will the proposed new or modified source emit a pollutant controlled under an existing Part 63 NESHAPS? ☒ Yes ☐ No (if yes, identify the pollutant). Acetaldehyde, Methanol and other federal HAPs are emitted from the Ethanol facility.
2. Is the proposed new or modified source subject to an existing Part 63 NESHAPS? ☐ Yes ☒ No (if yes, identify NESHAPS). The facility emissions are restricted to less than the 10 TPY / 25 TPY major source threshold.
3. Is the proposed project subject to s. 112(g) of the Clean Air Act? ☒ No.

The section 112(g) rules only apply to case-by-case MACT standards that are developed for new construction or reconstruction of sources that (by themselves) constitutes a new major source of federal hazardous air pollutants (for source categories not covered under an existing Part 63 MACT standard).

CRITERIA FOR PERMIT APPROVAL

Section 285.63, Wis. Stats., sets forth the specific language for permit approval criteria. The Department finds that:

1. The source will meet emission limitations.
2. The source will not cause nor exacerbate a violation of an air quality standard or ambient air increment.
3. The source is operating or seeks to operate under an emission reduction option. Not Applicable.
4. The source will not preclude the construction or operation of another source for which an air pollution control permit application has been received.

DETERMINATION

The preliminary determination of the DNR Air Management Program is that this project when constructed or modified and operated consistent with the application and subsequent information submitted will be able to meet the emission limits and conditions included in the attached Draft Permit. A final decision regarding emission limits and conditions will be made after the Department has reviewed and evaluated all comments received during the comment period. The proposed emission limits and other proposed conditions in the Draft Permit are written in the same form that they will appear in the construction permit and, where applicable, the operation permit. These proposed conditions may be changed as a result of public comments or further evaluation by the Department.

PERMIT FEE CALCULATION

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Basic Fees.

1. Construction or replacement of a PSD or NAA minor source or the PSD or NAA minor modification of a Part 70 minor source. [\$2,300]		\$2300
Total Basic Fees		\$2300

Additional Fees.

2. The permit application is for a PSD or NAA minor source or minor modification to a major PSD or NAA source whose projected air quality impact requires a detailed air quality modeling analysis. [\$700]	1 × \$700	\$700
3. The permit application required the review and analysis of 10 basic emissions unit(s). [\$400 per basic emission unit, 3 basic emissions unit(s).]	10 × \$400	\$4000
4. The application is for a source which requires specific permit conditions to limit the facility potential to emit in order to make the source or modification a PSD, NAA or Part 70 minor source or a PSD or NAA minor modification. [\$2,150]	1 × \$2150	\$2150
5. A public hearing on the application is held at the request of the permit applicant or its agent. [\$950]	1 × \$950	\$950
Total Additional Fee		\$7800
Total Fee (Total Basic Fee + Total Additional Fee)		\$10100

Credit(s).

6. The initial fee submitted with the application. [\$1,350 or \$1,000 if the application was received before July 1, 2000]		(\$1350)
7. The applicant publishes the newspaper notice		(\$150)
Total Credit		(\$1500)
TOTAL AMOUNT DUE (Total Fee + Total Credit)		\$8600

BEFORE THE DEPARTMENT OF NATURAL RESOURCES AIR MANAGEMENT PROGRAM

Wisconsin Department of Natural Resources, Air Management Program, Preliminary Determination on an Air Pollution Control Permit to Modify / Construct and an Air Pollution Control Operation Permit for an Air Contaminant Source located at Didion Milling, Inc., 501 South Williams Street, Cambria, Wisconsin.

Air Pollution Construction Permit No.: 07-DCF-003. Air Pollution Operation Permit No.: 111081520-F02.

Didion Milling, Inc., has submitted to the Department of Natural Resources (DNR) permit applications, including plans and specifications, for the modification of the grain dryer, construction of additional DDGS silos and grain toasters and for the modification of portions of the draft operation permit for its ethanol plant and grain storage / milling operation.

The Central Office of the DNR has analyzed these materials and has preliminarily determined that the project should meet the applicable criteria for permit approval as stated in ss. 285.63 and 285.64, Wis. Stats., including both the emission limits and the ambient air standards and should, therefore, be approved.

The issuance of a construction permit allows the construction or modification and initial operation of the emissions units identified in the construction permit. The issuance of a operation permit allows continued operation of the new or modified emissions units as well as continued operation of the existing emissions units at the source. Issuance of the revised operation permit may be delayed until the permittee demonstrates compliance with the applicable requirements in the permit.

This type of proposal normally does not have the potential to cause significant adverse environmental effects and the DNR has not prepared an Environmental Assessment of the proposal. However, an EA was prepared for a project of similar scope and complexity to address the technological and policy issues associated with Bio-Fuel facilities. For the current project, the content and procedural requirements of the previous EA meet the Prior Compliance provisions in s. NR 150.20(2)(c), Wisconsin Administrative Code. DNR has made a preliminary determination that neither an Environmental Impact Statement nor an EA will be required for this action. This preliminary determination does not constitute approval from the Air Management Program or any other DNR sections which may also require a review of the project.

The DNR hereby solicits written comments from the public regarding the preliminary determination to approve the construction permit and the operation permit applications. These comments will be considered by DNR prior to making final decisions regarding the modification / construction of the proposed project and the operation permit. Information, including plans and the DNR's preliminary analysis, is available for public inspection at the Department of Natural Resources Bureau of Air Management Headquarters, Seventh Floor, 101 South Webster, Madison, Wisconsin; 53707-7921; South Central Region Air Program, Reedsburg Area Office, PO Box 281, Reedsburg, WI, 53959; and at the Jane Morgan Memorial Library, 109 W. Edgewater St. PO Box 477, Cambria, WI 53923-0477; or contact Don C. Faith III, 608-267-3135. This information is also available for downloading from the Internet using a World Wide Web browser at: http://dnr.wi.gov/org/aw/air/permits/APM_toc.htm.

Interested persons wishing to comment on the preliminary determinations should submit written comments within 30 days of publication of this notice to:

Wisconsin Department of Natural Resources, Central Office, 101 S. Webster Street, Box 7921, Madison, WI 53707-7921. Attn.: Don C. Faith III.

NOTICE IS HEREBY GIVEN that, pursuant to ss. 285.13(1), 285.61(7)(a) and 285.62(5)(a), Wis. Stats., DNR will hold a public hearing to receive public comments on the air pollution control permit application for the construction and operation of the proposed facility modifications. All comments received by DNR on the proposed project will be considered by DNR prior to making its final decision regarding this project.

NOTICE IS FURTHER GIVEN that the public hearing will be held:

Tuesday, July 31, 2007, at 1:00 pm
Cambria Community Room
115 W. Edgewater St.
Cambria, Wisconsin

After the end of the public comment period, a final determination will be made on whether to issue or deny the air pollution control permits. Please contact Don Faith at DNR if you would like a copy of the final determination.

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Reasonable accommodation, including the provision of informational material in an alternative format, will be provided for qualified individuals with disabilities upon request.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

For the Secretary

By /s/ Jeffrey C. Hanson for
Kevin Kessler
Bureau Director

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